

What is claimed is:

1. An optical reading and/or writing system used with an optical disk, comprising:
 - an optical pickup including an objective lens, focusing a light beam to form a light spot on a recording surface of the optical disk;
 - a voice coil motor;
 - an actuator arm is pivotable in a radial direction of the optical disk by the voice coil motor;
 - a load beam supported by the actuator arm, and movable up and down and in the radial direction of the optical disk;
 - a slider on which the objective lens is mounted;
 - a flexure attached to the load beam, supporting the slider to move over the recording surface; and
 - a driving unit mounted on free ends of the actuator arm and the load beam, providing a driving force in the radial direction to the free end of the load beam.

2. The optical reading and/or writing system of claim 1, wherein the load beam comprises:

- a fixed end fixed to the actuator arm;
 - the free end extending from and flexible with respect to the fixed end; and

a hinged portion between the fixed end and the free end, facilitating movement of the free end in the radial direction.

3. The optical reading and/or writing system of claim 2, wherein the hinged portion comprises a pair of slim portions spaced a predetermined distance apart from each other, the slim portions connecting facing edges of the fixed end and the free end.

4. The optical reading and/or writing system of claim 2, wherein the hinged portion is formed around a hole to connect facing edges of the fixed end and the free end.

5. The optical reading and/or writing system of claim 2, wherein the fixed end and the free end are connected through the hinged portion.

6. The optical reading and/or writing system of claim 1, wherein the driving unit comprises a magnet and a pair of coils, the magnet and the pair of coils being mounted on free ends of the actuator arm and the load beam, respectively, facing each other.

7. An optical reading and/or writing system used with an optical disk, comprising:

a slider;

an actuator assembly pivotable in a radial direction of the optical disk, supporting the slider to enable the slider to move over a recording surface of the optical disk; and

an optical pickup focusing a light beam to form a light spot on the recording surface of the optical disk, the optical pickup comprising

a light source emitting the light beam,

an optical path changing unit arranged on an optical path between the light source and the recording surface, changing the traveling path of the incident beam,

an objective lens mounted onto the slider, focusing the light beam from the optical path changing unit onto the recording surface,

a photodetector receiving the light beam reflected from the recording surface and passed through the objective lens and the optical path changing unit, and

at least one optical fiber connecting at least the light source and the optical path changing unit, transferring the emitted light beam to the optical path changing unit,

wherein an optical loss between the light source and the optical path changing unit is suppressed.

8. The optical reading and/or writing system of claim 7, wherein the actuator assembly comprises:

an actuator arm pivotable in the radial direction of the optical disk by a voice coil motor;

an elastically deformable load beam having one end fixed to the actuator arm; and

a flexure attached to one side of the load beam;

wherein the optical path changing unit is disposed between the load beam and the actuator arm, facing the objective lens through first light passing apertures, respectively formed in the load beam and the flexure; and

wherein the photodetector is fitted into a second light passing aperture formed in the actuator arm to face the optical path changing unit and through the first light passing apertures.

9. The optical reading and/or writing system of claim 8, wherein the optical path changing unit is mounted on the load beam to face the actuator arm and to be enclosed by the second light passing aperture.

10. The optical reading and/or writing system of claim 7, wherein the objective lens, the optical path changing unit and the photodetector are vertically aligned.

11. The optical reading and/or writing system of claim 8, further comprising;
a base, wherein the actuator assembly further comprises a mounter supported against the base and has a recess receiving the light source, and the actuator arm has a hole for passing the optical fiber from one side to the other side thereof.

12. An optical system used with an optical disk, comprising:
an actuator arm pivotable in a radial direction of the optical disk;
a load beam supported by the actuator arm and having a first end movable in the radial direction relative to the movement of the actuator arm; and
a slide element having an objective lens and attached to the load beam, the slide element movable over a recording surface of the optical disk.

13. The optical system of claim 12, further comprising a driving unit mounted on a first end of the actuator arm and the first end of the load beam, providing a driving force to the first end of the load beam relative to the actuator arm.

14. The optical system of claim 13, wherein the driving unit comprises:
a magnet mounted on the first end of the actuator arm; and
coils mounted on the first end of the load beam, interacting with the magnet to generate the drive force.

15. The optical system of claim 12, wherein the load beam comprises:
a second end fixed to a second end of the actuator arm; and

a intermediate region, between the first and second ends of the load beam, and flexible so as to enable the movement of the first end of the load beam in the radial direction relative to the actuator arm.

16. The optical system of claim 15, wherein the intermediate region comprises a pair of extensions separated by a gap from each other, connecting facing edges of the first and second ends of the load arm.

17. The optical system of claim 13, wherein the load beam comprises:

a second end fixed to a second end of the actuator arm; and

an intermediate region, between the first and second ends of the load beam closer to the second end of the load beam, flexible so as to enable the movement of the first end of the load beam in the radial direction relative to the actuator arm and spaced apart from the driving unit by a predetermined distance.

18. The optical system of claim 17, wherein the intermediate region comprises a pair of extensions separated by a gap from each other, connecting facing edges of the first and second ends of the load arm.

19. The optical system of claim 12, further comprising:

an optical pickup focusing a light beam onto the recording surface of the optical disk, comprising

a light source mounted on the actuator arm, generating the light beam,

a photodetector,

an optical path changing unit directing the light beam from the light source toward the recording surface of the optical disk, and the light beam reflected from the recording surface of the optical disk toward the photodetector, and

an optical fiber connecting the light source and the optical path changing unit, transferring the light beam from the light source to the optical path changing unit.

20. The optical system of claim 19, wherein:

the light source is mounted at a second end of the actuator arm at a first side of the actuator arm facing away from the optical disk;

the optical path changing unit is disposed between the first ends of the load beam and the actuator arm at a second side of the actuator arm opposite the first side; and

the photodetector is in a second light passing aperture at the first side of the actuator arm;

the actuator arm has a hold passing the optical fiber from the first side at the light source to the second side at the optical path changing unit of actuator arm.

21. The optical system of claim 20, wherein the objective lens, the optical path changing unit and the photodetector are aligned in a direction perpendicular to the recording surface of the optical disk.

22. The optical system of claim 19, wherein the objective lens, the optical path changing unit and the photodetector are aligned in a direction perpendicular to the recording surface of the optical disk.

23. The optical system of claim 19, wherein the objective lens, the optical path changing unit and the photodetector are adjacent to each other at a first end of the sliding element, and the first ends of the load beam and the actuator arm.

24. The optical system of claim 12, further comprising:

an optical pickup focusing a light beam onto the recording surface of the optical disk comprising

a light source mounted on the actuator arm, generating the light beam,
a photodetector, and
an optical path changing unit directing the light beam from the light source toward the recording surface of the optical disk, and the light beam reflected from the recording surface of the optical disk toward the photodetector;
wherein the objective lens, the optical path changing unit and the photodetector are aligned in a direction perpendicular to the recording surface of the optical disk.

25. The optical system of claim 12, further comprising:
an optical pickup focusing a light beam onto the recording surface of the optical disk, comprising
a light source mounted on the actuator arm, generating the light beam,
a photodetector, and
an optical path changing unit directing the light beam from the light source toward the recording surface of the optical disk, and the light beam reflected from the recording surface of the optical disk toward the photodetector;
wherein the objective lens, the optical path changing unit and the photodetector are adjacent to each other at a first end of the sliding element, and the first ends of the load beam and the actuator arm.

26. An optical system used with an optical disk, comprising:

an actuator assembly pivotable in a radial direction of the optical disk, and

an optical pickup focusing a light beam onto the recording surface of the optical disk, comprising

a light source mounted on the actuator arm assembly, generating the light beam,

a photodetector mounted on the actuator arm assembly,

an optical path changing unit, mounted on the actuator arm assembly, directing the light beam from the light source toward the recording surface of the optical disk, and the light beam reflected from the recording surface of the optical disk toward the photodetector, and

an optical fiber connecting the light source and the optical path changing unit, transferring the light beam from the light source to the optical path changing unit.

27. An optical system used with an optical disk, comprising:

an actuator arm assembly pivotable in a radial direction of the optical disk, and supporting a slider movable over a recording surface of the optical disk;

an optical pickup focusing a light beam onto the recording surface of the optical disk, comprising

a light source mounted on the actuator arm assembly, generating the light beam,

a photodetector mounted on the actuator arm assembly,

an optical path changing unit mounted on the actuator arm assembly, directing the light beam from the light source toward the recording surface of the optical disk, and the light beam reflected from the recording surface of the optical disk toward the photodetector, and

an objective lens mounted on the slider, focusing the light beam from the optical path changing unit to the recording surface of the optical disk;

wherein the objective lens, the optical path changing unit and the photodetector are aligned in a direction perpendicular to the recording surface of the optical disk.

28. The optical system of claim 27, wherein the actuator assembly comprises:

an actuator arm pivotable in the radial direction of the optical disk;

an elastically deformable load beam having one end fixed to the actuator arm and a flexure attached to one side of the load beam;

wherein the optical path changing unit is disposed between the load beam and the actuator arm, facing the objective lens through first light passing apertures respectively formed in a second end of the load beam and in the flexure; and

wherein the photodetector faces the optical path changing unit and the objective lens through a second light passing aperture formed in an end of the actuator arm and aligned with the first light passing apertures.

29. The optical system of claim 28, wherein the photodetector is fitted in the second light passing aperture and the optical path changing unit is mounted on the load beam to face the actuator arm and is enclosed by the second light passing aperture.

30. An optical system used with an optical disk, comprising:

an actuator arm assembly pivotable in a radial direction of the optical disk, and supporting a slider movable over a recording surface of the optical disk;

an optical pickup focusing a light beam onto the recording surface of the optical disk, comprising

a light source mounted on the actuator arm assembly, generating the light beam,

a photodetector mounted on the actuator arm assembly,

an optical path changing unit mounted on the actuator arm assembly, directing the light beam from the light source toward the recording surface of the optical disk, and the light beam reflected from the recording surface of the optical disk toward the photodetector, and

an objective lens mounted on the slider, focusing the light beam from the optical path changing unit to the recording surface of the optical disk;

wherein the objective lens, the optical path changing unit and the photodetector are adjacent to each other at a first end of the sliding element, and the first ends of the load beam and the actuator arm.

31. The optical system of claim 30, wherein the actuator assembly comprises:

an actuator arm pivotable in the radial direction of the optical disk;

an elastically deformable load beam having one end fixed to the actuator arm and a flexure attached to one side of the load beam;

wherein the optical path changing unit is disposed between the load beam and the actuator arm, facing the objective lens through first light passing apertures respectively formed in a second end of the load beam and in the flexure; and

wherein the photodetector faces the optical path changing unit and the objective lens through a second light passing aperture formed in an end of the actuator arm and aligned with the first light passing apertures.

32. The optical system of claim 31, wherein the photodetector is fitted in the second light passing aperture and the optical path changing unit is mounted on the load beam to face the actuator arm and is enclosed by the second light passing aperture.